

The Influence of Conversational Content on College Students' Safe Sex Intentions: A Mixed Method Approach

Lennie Donné^{1,2}, Carel Jansen^{1,3} & John Hoeks¹

¹ University of Groningen, Centre for Language and Cognition, Groningen, the Netherlands

² HU University of Applied Sciences Utrecht, Utrecht, the Netherlands

³ Stellenbosch University, Language Centre, Stellenbosch, South Africa

Correspondence: Lennie Donné, University of Groningen, Oude Kijk in 't Jatstraat 26, 9712 EK, Groningen, the Netherlands. E-mail: L.Donne@rug.nl

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Abstract

Even though health campaign designers are advised to specifically focus on triggering conversations between people about health issues, there is still a lot unknown about what aspects of a conversation may contribute to safe sex behavior and intentions. Empirical research in this field so far has mainly focused on conversational occurrence rather than conversational content, and where content is taken into account, this mostly concerns self-reports. In this mixed method study, we looked into the quantitative effects of real-life conversations about safe sex, triggered by a safe sex message, on college students' intentions related to safe sex. We then used a qualitative analysis to try and identify content-related aspects that may be related to the quantitative effects. Two weeks after filling in a questionnaire on their safe sex-related intentions, participants (N = 24) were instructed to watch and talk about a safe sex video with a conversation partner of choice, followed by filling in a questionnaire. The conversational data were analyzed qualitatively. The results suggest that the conversations increased safe sex-related intentions compared to pretest scores, and that content-related aspects such as conversational valence, type of communication behavior and behavioral determinants were related to these effects. Thus, our findings provide enhanced insight into the social norms and behavioral patterns related to safe sex, and indicate that it is important to look at conversational content in detail rather than to focus on mere conversational occurrence or quantitative effects.

Keywords: college students, conversational content, interpersonal communication, mixed-method, safe sex

1. Introduction

1.1 *The role of Interpersonal Health Communication in the Persuasion Process*

In the past decades, researchers in the field of health communication have increasingly focused on the role of face-to-face interpersonal communication in the effectiveness of health campaigns. With this development, the field moves away from the assumption that in mass communication, the health campaign itself is exclusively responsible for effects on health behavior, acknowledging that “media messages are not consumed in a vacuum, and the personal experiences of many (if not most) individuals would support the statement that media stimulates conversation and social interaction” (Helme et al, 2011, p. 367). Conversations elicited by health campaigns may influence health behavior, for instance because they spread the message further to a larger audience (Dunlop, Kashima, & Wakefield, 2010), because they may lead to the discovery of social norms (Hornik & Yanovitzky, 2003; Frank et al., 2012), provide social support (Duggan, 2006), increase feelings of self-efficacy (Frank et al., 2012), or because they may help break taboos concerning sensitive topics such as HIV/AIDS (Pettifor et al., 2004).

Several empirical studies have indeed found evidence for the important role of interpersonal communication in health campaign effects (e.g., Chatterjee, Bhanot, Frank, Murphy, & Power, 2009; Van den Putte, Yzer, Southwell, De Bruijn, & Willemsen, 2011; Frank et al., 2012). Seen in this light, triggering interpersonal communication may be a fruitful strategy in order to maximize the effectiveness of health campaigns.

1.2 *Ambiguous Effects of Interpersonal Health Communication*

Most of the research on the topic of interpersonal communication about health issues has so far relied on

questionnaire studies in which conversations on health issues are studied indirectly, for instance by asking participants to report on past conversation behavior (e.g., Chatterjee et al., 2009; Frank et al., 2012; Helme et al., 2011; Van den Putte et al., 2011; Hendriks & De Bruijn, 2015), or on their intention to engage in conversations on a certain topic (e.g., Jansen & Janssen, 2010; Lubinga, Schulze, Jansen, & Maes, 2010; Lubinga, Jansen, & Maes, 2014). Thus, these studies mainly focused on whether or not conversations took place, i.e., conversational *occurrence*. In order to establish effects of conversations on health behavior determinants, it is essential that we also look at the *content* of these conversations (as recommended by Southwell & Yzer, 2007; Frank et al., 2012).

Focusing on the mechanism underlying the effectiveness of interpersonal communication seems especially important as conversations that are stimulated by a health campaign will not always be in agreement with the aims of the campaign (Hafstad & Aaro, 1997; Dunlop, 2011). Indeed, several studies have found unintended - and undesirable- effects of conversations about health messages (David, Capella, and Fishbein, 2006; Van den Putte et al., 2011; Hendriks, Van den Putte, De Bruijn, & De Vreese, 2014; Lubinga, Maes, & Jansen, 2016). Lubinga et al. (2016), for instance, found that young South African adolescents' conversations about cryptic HIV/AIDS messages decreased the level of understanding of these health messages in a considerable number of cases. Interpersonal communication about health messages that are not understood correctly may thus increase the reach and frequency of misinterpretations of the messages, which may have dangerous consequences (Lubinga et al., 2010). It therefore seems a good idea to learn more about the content and effects of health-related conversations.

1.3 Aspects of Conversational Content

So what aspects of conversational content could be involved in persuasion? An early study by Weinstein (1993) looked at persuasive conversations between friends about self-protective health behavior, such as exercising three times a week, or flossing regularly. One of the goals was to determine what ingredients of a conversation may make a conversation persuasive. Weinstein did not identify any particular ingredients in the conversations that appeared to have special persuasive power. Rather, the fact *that* a peer had recommended something seemed more persuasive than any specific argument in the conversation (Weinstein, 1993).

Later studies, however, did suggest content-related aspects that may influence the persuasion process. For instance, a number of studies found that 'conversation valence' or the favorability of the conversation, that is, whether conversation partners talk positively or negatively about the health topic, may be an important factor in the effects of interpersonal health communication on health behavior (Morgan, 2009; Dunlop et al., 2010; Frank et al., 2012; Hendriks, De Bruijn, & Van den Putte, 2012; Brennan, Durkin, Wakefield, & Kashima, 2016). However, conversational valence is unlikely to be the only factor involved. Donné, Jansen, and Hoeks (2017a), for instance, conducted an interview study, asking people how and with whom they communicated about various kinds of health behavior (using sunscreen, eating healthy, safe sex, etc.). They found four general types of health-related conversation: admonishing ("urging [the conversation partner] to adapt health behavior, to prevent damage to his or her own health and/or that of others"), casual talk ("talking about a health theme in a social situation"), educating ("providing the conversation partner with information on a health issue to prevent him or her from performing unhealthy behavior"), and negotiating ("attempting to reach agreement with each other on performing healthy behavior for the benefit of both the self and the conversation partner") (p. 4). Donné et al. (2017a) suggested that the effect on health behavior and intentions may be different for each of these conversation types.

So how can changes in intention actually be brought about? According to the Reasoned Action Approach (Fishbein & Ajzen, 2010), the likelihood that one will actually perform a certain behavior is ultimately determined by his or her set of beliefs regarding this behavior. These beliefs can pertain to the attitude towards the behavior, to the perceived social norm, and to the person's perceived control over successfully performing the behavior. For a graphical depiction of the model (Fishbein & Ajzen, 2010), see Figure 1.

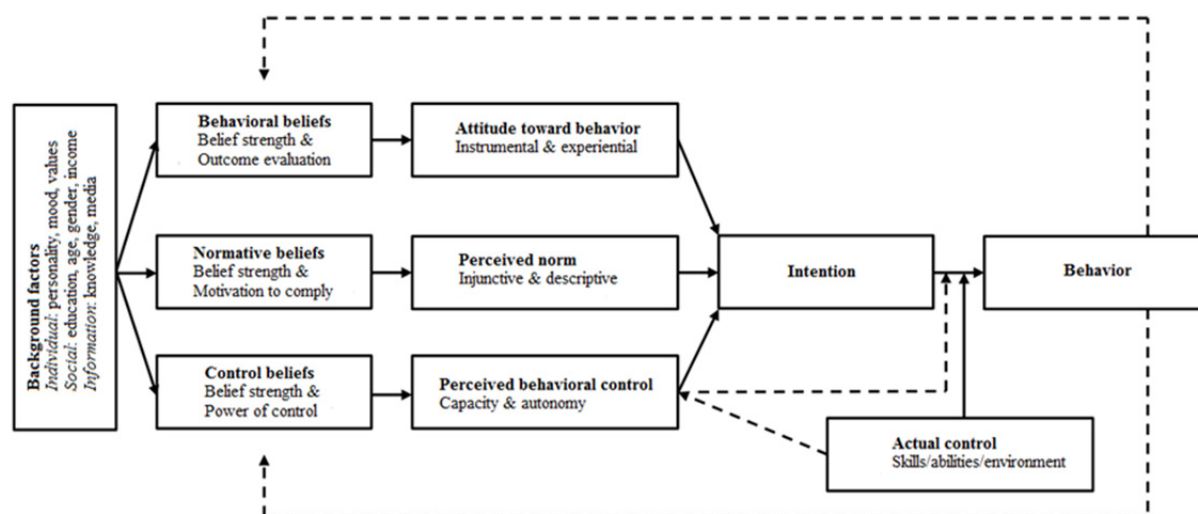


Figure 1. Reasoned action approach (Fishbein & Ajzen, 2010)

According to this model, messages, or conversations for that matter, can affect intention by bringing about a change in attitude, perceived norm or perceived behavioral control. This can be done in basically four ways: 1) by adding *new* beliefs, 2) by changing the *strength* of beliefs, 3) by changing the *evaluation* of these beliefs, or 4) by changing the *saliency* of beliefs.

In our current study, we will look further than mere conversational occurrence, and we will attempt to find out how the content of conversations might determine the persuasive effects produced by these conversations. We will focus on three content-related aspects: conversational valence, types of communication behavior, and behavioral determinants. In the next section, we will zoom in on the specific health theme that will be central to this study: safe sex.

1.4 Safe Sex Communication among College Students

Although college students generally know how to prevent a sexually transmitted infection (STI), condom use is not a normative behavior among this group (Troth & Peterson, 2000). Safe sex communication (SSC in the rest of this article), that is, communication about birth control and preventing STIs (cf. Cleary, Bahrman, MacCormack, & Herold, 2002), seems to be crucial in order to change health behavior and intentions. SSC has been found to be an important predictor of, for instance, condom use (Widman, Noar, Choukas-Bradley, & Francis, 2014).

A meta-analysis by Noar, Carlyle, and Cole (2006) found that SSC, specifically with a sexual partner, may be an important determinant of safe sexual behavior. SSC can also take place between parents and children (Troth & Peterson, 2000; Eisenberg, Sieving, Bearinger, Swain, & Resnick, 2006), and between friends (Lefkowitz, Boone, & Shearer, 2004; Busse, Fishbein, Bleakley, & Hennessy, 2010; Helme et al., 2011). For college students, friends are an important source of sex-related information (Kallen, Stephenson, & Doughty, 1983), and once students have more experience in talking about safe sex with friends, they may also find it easier to talk about safe sex with a sexual partner (Lefkowitz et al., 2004). Consistently, in the field of sexual health promotion for young people, peer education is a popular strategy (e.g., Tolli, 2012). In peer education, members of similar age or status are trained to share or teach health-related information or values to their peers. While we recognize the possibly important role of peers skilled in sexual health promotion, in the present study we were interested in finding out more about the effectiveness of conversations between peers who are not specifically trained in talking about health information.

Helme et al. (2011) found that safe sex mass media campaigns are often viewed in the presence of others, for instance friends or partners, and that viewing those messages often results in conversations about the message. In the present study, we focus on conversations triggered by a safe sex intervention developed by Donné, Hoeks, and Jansen (2017b). Following recommendations made by Yzer, Siero, and Buunk (2001), the main focus of the present study is on college students *without* a steady sexual partner, since they face a relatively high risk for STI infection compared to college students with a steady sexual partner, and SSC is thus expected to be more relevant for this group.

1.5 The Present Study

In the present study, we use both quantitative and qualitative methods to investigate the effects and content of SSC triggered by a safe sex message. We aim to answer the following research questions:

RQ1: What is the effect of conversations about safe sex triggered by a safe sex message on college students' intentions related to safe sex?

RQ2: Which content-related aspects with regard to conversational valence, types of communication behavior, and behavioral determinants can be identified in conversations about safe sex triggered by a safe sex message?

RQ3: How do the content-related aspects identified in RQ2 relate to the effects found in RQ1?

2. Method

2.1 Design, Participants and Procedure

The study was set in a quasi-experimental pretest-posttest design and consisted of three waves of data collection. Table 1 shows information on when the three waves of data collection (referred to as W1, W2 and W3 in the rest of this article) took place. A total of $N = 24$ participants took part in the data collection (68.8% women; mean age: 20.4 years). All participants received a financial compensation of €10 for their participation.

At W1, participants were recruited either in class or online through email or social media networks. Based on their answers in an online questionnaire (W1-Q) we assessed their eligibility for participating in the experiment, that is, whether they were college students without a steady sexual partner, since SSC was thought to be more relevant for this group than for college students with a steady sexual partner. In order to prevent a possible priming effect, we concealed the goal of the experiment by not only including questions in W1-Q regarding safe sex but also regarding other topics that may be relevant to college students: alcohol and XTC.

The first author contacted the participants through email, and asked them to find a conversation partner with whom they were comfortable talking about issues raised in W1-Q (i.e., alcohol, XTC and safe sex). Once participants indicated that they had found a conversation partner, they received more detailed instructions through email about the procedure to be followed in W2.

After two weeks, W2 took place in the private environment of one of each dyad of participants and their conversation partner, in the absence of experimenters. W2 consisted of a series of actions described in an online protocol, followed by an online questionnaire. Before being exposed to the video clip on SSC, participants first viewed a short anti-substance abuse PSA, after which they were instructed to talk about the topic 'alcohol' for five minutes. This task was included to get participants used to talking about a health topic in the self-selected dyad, and to recording the conversation. Participants were then instructed to watch a video clip on safe sex (see section 2.2) which they could find through a URL, after which they were instructed to talk about the topic "safe sex" for five minutes, and to record these conversations. They were asked to stay on topic as much as possible, and to only make one take of recording. Finally, the participants were asked to individually fill out the online questionnaire (W2-Q) including questions regarding, among other things, intentions with regard to safe sex and SSC. All 24 recordings of the conversations between the participants were transcribed verbatim. Any information linking to the identification of participants, e.g., names, was not included in the transcripts.

Two weeks later, W3 took place. All participants and their conversation partners were asked to complete an online questionnaire (W3-Q) including questions regarding their actual safe sex behavior in the past two weeks. However, most participants indicated that they had not been sexually active in the limited time span between W2 and W3. We were therefore unfortunately not able to analyze the resulting behavioral data in a meaningful way. Consequently, the data on this variable are not taken into account in section 3. After filling out W3-Q, all participants and their conversation partners received a financial compensation of €10.

Table 1. The three waves of data collection

	When	What
Wave 1 (W1)	A0	Questionnaire 1 (W1-Q)
Wave 2 (W2)	A0 + 2 weeks	- Watching video - Conversation - Questionnaire 2 (W2-Q)
Wave 3 (W3)	A0 + 4 weeks	Questionnaire 3 (W3-Q)

2.2 Stimulus Material

The stimulus material consisted of a video clip on SSC (Donné et al., 2017b). In this 2-minute video clip, two male students are depicted in their dormitory, drinking beer, and talking – through text balloons - about their experiences with SSC with a sexual partner. Each friend shares a recent anecdote in which the topic of safe sex (i.e., condom use) was brought up before having sex with a girl. In both anecdotes, SSC with a sexual partner leads to actual condom use without any problems.

2.3 Measures

Questions were asked on actual behavior and intentions regarding safe sex and intentions for SSC with both sexual partner and friends (all based on Donné et al., 2017b). Behavior was measured using semantic differential items followed by a 5-point scale; intentions were measured using Likert items followed by a 7-point scale. Furthermore, questions were asked regarding participants' age, gender, sexual preference (open ended question), sexual activity, and status of having a steady sexual partner. Moreover, in an open-ended question in the posttest, we asked what the relationship was with the conversation partner (e.g., friends or family). A full description of the items can be found in Appendix A.

2.4 Data Analysis

2.4.1 Quantitative Data Analysis

We conducted a 2 x 3 Repeated Measures ANOVA with *wave* (W1 versus W2) and *intention type* (safe sex versus SSC partner versus SSC friends) as within-participants factors.

2.4.2 Qualitative Data Analysis

We qualitatively analyzed the transcripts of the 24 conversations that were recorded by the participants with regard to (1) conversational valence, (2) types of communication behavior, and (3) behavioral determinants.

In order to assess conversational valence, the transcripts were first divided into codable information units, consisting of any meaningful utterance about one topic (Lubinga et al., 2016). An information unit did not necessarily coincide with one clause: A clause could consist of multiple information units, or one information unit could extend over multiple clauses. An example of an information unit is “And I know, for example, well, for example, I have someone in my group of friends from home. I know that she quite regularly eh.. shares the bed with someone else and that she then regularly.. eh.. for example.. eh.. doesn't do it safely.”, see also example (3). This first step of analysis resulted in N = 616 information units. Following Hendriks, Van den Putte, and De Bruijn (2015), in order to assess conversational valence, every information unit related to safe sex or safe sex communication in the conversation was coded. We coded an information unit as positive when it would most likely increase the chance that the participant would have safe sex, and as negative when it would most likely decrease the change that the participant would have safe sex. Subsequently, in order to determine the valence per conversation, we subtracted the number or negative information units from the number of positive information units. For every information unit, coder 1 (the first author of this article) determined the valence. Next, coder 2 (a well-trained research assistant) thoroughly reviewed coder 1's conversational valence codes, resulting in an agreement of 78% (note 1). Codes that both coders did not agree on were discussed until full agreement was reached.

In order to identify types of communication behavior, we adopted definitions of the four types of communication behavior: admonishing, casual talk, educating and negotiating, from Donné et al. (2017a; see section 1.3). Coder 1 analyzed all 24 conversations according to the pre-established definitions of the four types of communication behavior. Subsequently, coder 3 (the third author of this article) thoroughly reviewed coder 1's analyses, and checked whether there were codes of types of communication behavior he did not agree on with coder 1, resulting

in an agreement of 93%. Any disagreements were resolved by discussion.

Finally, we identified behavioral determinants in the conversations. In this step of data analysis, the information units we generated in order to assess conversational valence were labeled according to definitions of the reasoned action approach provided by Fishbein & Ajzen (2010). For every information unit, coder 2 established to which concept within the reasoned action approach the information unit was related. The concepts within the reasoned action approach were operationalized based on Fishbein and Ajzen (2010), and in discussion between coder 1, coder 2, coder 3, and coder 4 (the second author of this article). The definitions can be found in Appendix B. Coder 1 subsequently thoroughly reviewed coder 2's analyses of the 616 information units in terms of the reasoned action approach-concepts, resulting in an agreement of 81%. Codes that both coders did not agree on were discussed until full agreement was reached. The final codes were checked by coder 3 and coder 4.

3. Results

Below, in section 3.1, we first discuss the quantitative results with regard to participants' questionnaire W1-Q and W2-Q answers in order to answer RQ1. Subsequently, in section 3.2, we discuss the qualitative results, i.e., the content of the conversation transcripts with regard to (1) conversational valence; (2) types of communication behavior; and (3) behavioral determinants in order to answer RQ2. Finally, in order to answer RQ3, in section 3.3, we relate the quantitative results to the qualitative results.

3.1 Quantitative Results

Table 2 shows the means and standard deviations of the variables measured in W1 and W2.

Table 2. Means (and SD) of variables measured in W1 and W2. 1 = low; 7 = high

	W1	W2
Safe sex intention	5.09 (1.43)	5.39 (1.51)
SSC partner intention	5.52 (1.28)	5.76 (1.40)
SSC friends intention	4.72 (1.65)	5.33 (1.49)

We found a main effect of *wave* ($F(1,22) = 4.59$; $p < .05$), reflecting that mean scores on intention were significantly higher on W2 ($M = 5.49$; $SE = 0.19$) than on W1 ($M = 5.11$; $SE = 0.23$).

3.2 Qualitative Results

Our findings will be illustrated by excerpts taken from each conversation consisting of conversational turns, which were translated from Dutch into English for the purpose of this article. In this section, we refer to "person A" as the target participants of this study, and "person B" as their conversation partners. Table 3 in Appendix C indicates for each individual conversation the following data: sex of the conversation partners, their relationship, the overall valence of the conversation, the types of communication behavior we identified, and safe sex intention scores for person A at times W1 and W2.

3.2.1 Conversational Valence

As described in section 2.4.2, we established the conversational valence of each individual conversation. In most conversations ($N = 19$) participants talked predominantly positively about safe sex, as in the following example (conversation 2):

(1) B: Yeah. No, I would just do it safe and also, just be honest with yourself, that you don't want an STI or something yourself either. At least, it seems to me that no one would want that.

A: Yeah.

B: And should you have one, then you should definitely not be proud of it.

In the 5 remaining conversations, participants talked about safe sex in a more negative way, as in the following example, which indicates a lack of perceived risk or perceived vulnerability for contracting an STI (conversation 20):

(2) B: Aren't you afraid that eh.. well you contract something through unsafe sex?

A: Well actually no. I feel like it's a very far-off thing, but eh no actually.. not.

3.2.2 Types of Communication Behavior

As described in section 2.4.2, we also looked at the types of communication behavior that could be identified in the conversation.

In 21 of the 24 conversations we identified casual talk. In some cases, casual talk revolved around the exchange of anecdotes or experiences, as in the following example (conversation 21):

(3) A: And I know, for example, well, for example, I have someone in my group of friends from home. I know that she quite regularly eh.. shares the bed with someone else and that she then regularly.. eh.. for example.. eh.. doesn't do it safely. It even happened once that we got a message in our WhatsApp group like.. it's a girl, by the way, like eh yeah, eh, how can I get the morning after pill, as a matter of eh.. I laughed really hard about that.

In other cases, as in the following example (conversation 10), casual talk revolved around participants' attitude toward sexuality or safe sex:

(4) A: That's ridiculous, right? It's just.. I think that yeah, when a guy won't take care of it [a condom], then I will. And if he then doesn't want to anymore, well, he can beat it (laughs).

B: Yeah, that's true.

A: That's how I feel.

B: Yeah, that's your opinion, a lot of girls are not resilient enough against that, right?

Furthermore, in 8 cases we found examples of educating behavior, in which explicit information on safe sex was exchanged, as in the following example (conversation 12):

(5) A: And why would you eh.. choose to use protection or not to use protection?

B: Eh.. yeah, you don't want to deal with the consequences, like, STI or worst case scenario a baby, if you don't want one. Yeah, those are the main reasons why you would use that to have safe sex.

Finally, in 4 cases, one of the conversation partners admonished the other on his or her sexual behavior. In some cases, the admonishment occurred directly, as in the following example (conversation 3):

(6) A: With X, I did it without [a condom] once too.

B: Ooooooh..

A: Terrible, huh?

B: Were you on the pill?

A: I did.. no.

B: You nitwit!

In other cases, the admonishment occurred more indirectly, as in the following example (conversation 20):

(7) A: Would you do it [safe] next time?

B: Yes.

A: Yes?

B: Yes.

A: Okay. Clever.

Since none of the conversations took place between sexual partners, we did not identify any cases of negotiating behavior. However, in 17 conversations, participants talked *about* negotiating about safe sex. Since participants often referred to personal experiences or anecdotes, talking about negotiating can also be seen as a form of casual talk, as in the following example (conversation 8):

(8) A: I can imagine eh what they mean with that it may kill the mood a little bit when you ask that question. But I actually kind of like it and especially when a guy talks about this first eh.. that he just, that shows responsibility and stuff. I think that is eh.. that is really cool actually.

3.2.3 Behavioral Determinants

Finally, for every conversation, the content was analyzed with regard to behavioral determinants of safe sex in terms of the reasoned action approach (Fishbein & Ajzen, 2010). We found that participants most often talked about their attitudes (N = 177), as in the following example (conversation 17):

(9) B: That [Intra-Uterine Device] is kind of handy, because then you don't have to think about it any further and I don't want kids or something in the next couple of years anyway so then. Well.

Furthermore, participants often talked about their intention (N = 49) or their behavior (N = 41) with regard to safe sex, as in the following example (conversation 21):

(10) A: (...) Eh yeah about myself, about myself I have a bit more to talk about: I pretty much always do it safe.

Moreover, in 49 cases, participants talked about their past behavior, as in the following example (conversation 5):

(11) B: I can't even recall that we ever used a condom (...)

In 52 information units we identified an injunctive norm, as in the following example (conversation 24):

(12) B: (...) I find it pretty difficult to find where you can do an STI test, how you can do that easily and there is a little bit of a taboo there and you don't want people to find out. Does it cost money, does it not cost anything?

In 39 information units we identified a descriptive norm, as in the following example (conversation 10):

(13) A: You hear a lot of stories of eh (...) well in Groningen in any case, yeah I think that only few students actually do it safe.

With regard to perceived behavioral control, we mostly uncovered information on perceived capacity (N = 47), as in the following example (conversation 17):

(14) B: And I don't think that I would forget [to have safe sex] or something.

A: No.

B: Or that I would be scared to ask.

3.3 Comparing Quantitative and Qualitative Results

We compared individual scores of W1 to W2. As can be seen in Table 3 in Appendix C, we found that in 7 dyads, person A's intention to have safe sex decreased *numerically* (ranging from a decrease of 0.5 to 3.5 on the 7-point rating scale). In 3 dyads, person A's intention to have safe sex did not change. In 13 dyads, person A's intention to have safe sex increased (ranging from an increase of 0.5 to 2.5).

It should be noted that for most dyads (N = 21), person A's safe sex intention scores were already above midpoint "4" of the 7-point rating scale at W1, and also at W2 (N = 20). Furthermore, for most dyads (N = 17), changes in person A's safe sex intentions did not exceed 1 on the 7-point rating scale that was used. Below, we zoom in on the dyads that show either a decrease or an increase of more than 1 scale point in person A's safe sex intentions compared to W1 scores. For these conversations, we will look in more detail at what comprised the content of the conversations with regard to conversational valence, type of communication behavior, and behavioral determinants, and explore how this relates to the quantitative effects we found. The criterium used here (of more than one scale point) is of course rather arbitrary, but it is used heuristically to allow us to focus on the clearest cases of change in intention.

3.3.1 Quantitative Decrease in Safe Sex Intentions

In two conversations (number 12 and 22, see Appendix C), person A's safe sex intention decreased (resp. from 5.5 to 2 and from 5.5 to 3.5). Both conversations were coded as having an overall positive valence (see section 3.2.1), indicating a discrepancy between questionnaire scores and the valence that we coded. In both conversations, casual talk was the dominant type of communication behavior. Whereas in the first conversation partners mainly exchanged experiences and anecdotes with regard to safe sex, in the second conversation, the dyad mainly talked about their general attitude towards sexuality and safe sex. Furthermore, they exchanged knowledge on safe sex.

Both conversations predominantly revealed information units exposing behavioral determinants with a positive valence. For the conversation 12, both person A and person B expressed their intention to have safe sex. Person A furthermore indicated as an injunctive norm that having an STI is not cool. Moreover, person B expressed that it may ruin the mood a little bit to talk about condoms, but that this does not outweigh the benefits, which indicates an instrumental attitude. All of these utterances emphasize the importance of having safe sex. It is therefore rather difficult to account for the quantitative decrease in person A's safe sex intentions.

In conversation 22 a number of information units exposing behavioral determinants with a negative valence were identified: With regard to safe sex behavior and intention, person A indicated she rarely has safe sex, and that she does not intend to bring a condom when going out. Furthermore, person A and B both revealed the experiential attitude that using a condom is a hassle and that past experiences with a condom went wrong. Finally, person B (female) mentioned as an injunctive norm that having sex with a condom is less pleasurable for a man. However,

quite a few information units in this conversation revolve around anecdotes in which a condom *was* actually used or in which past sexual education in school is discussed, accounting for more information units with a positive valence.

3.3.2 Quantitative *Increase* in Safe Sex Intentions

In 4 conversations (number 4, 14 17 and 24, see Appendix C), person A's safe sex intention increased by >1 compared to W1 scores (resp. from 5 to 7, from 5 to 6.5, from 4 to 6 and from 2.5 to 5). All 4 conversations were coded as having a positive valence. In these conversations, we identified casual talk and educating as the dominant types of communication behavior. The casual talk mostly revolved around the exchange of anecdotes, around a general attitude regarding sexuality and safe sex, or around talking about negotiating with a sexual partner. In conversation 24, person B indirectly admonished person A when she indicated not always having safe sex, e.g., by saying: "But with a steady boyfriend you would, right?". In this conversation, the admonishment and anecdotes shared by person B may have contributed to the increase in person A's safe sex intentions, even when person A indicated in the conversation she does not always have safe sex.

A number of information units exposing behavioral determinants with a positive valence could be identified: some participants indicated they generally have, and also intend to have, safe sex, and always keep condoms in their house. Furthermore, several experiential and instrumental attitudes were expressed: it is not strange to talk about condoms, it is a good idea to have safe sex and to take an STI test, especially with varying sexual partners. Some participants indicated they do not want to get pregnant at their age, and that having unsafe sex is not worth the risk. Additionally, the descriptive social norm was expressed that people in the social environment talk a lot about safe sex. Moreover, some participants expressed perceived behavioral control, e.g., by indicating that they would not hesitate to bring up the topic of safe sex, and that a sexual partner had better be fine with using a condom because otherwise the participant would not have sex. Finally, participants talked about the importance and effectiveness of using condoms and other safe sex methods such as the pill. The overall positive valence of the behavioral determinants identified in these conversations may account for the quantitative increase in person A's safe sex intentions.

4. Discussion

With this study, we attempted to unravel the effects of conversations on determinants of college students' safe sex intentions. Earlier studies on interpersonal health communication have found that, in some cases, conversations have a positive effect on the advocated health behavior, but they have also found instances where the effects are detrimental. To find out more about how conversations can give rise to these contrasting outcomes, we looked at the content of actual conversations, instead of focusing on indirect, self-reported measures of conversations as was done in previous work. In the present study, we recorded and analyzed actual conversations about safe sex, triggered by a safe sex message, in order to find out whether and how such a conversation would have an effect on safe sex intentions.

We found that watching a safe sex message followed by a conversation on safe sex significantly improved intentions to have safe sex and to discuss safe sex with a sexual partner and with friends. This result was significant despite the fact that scores on safe sex intention were already quite high at W1, and despite the limited number of participants due to strict inclusion criteria for participants and our choice for including in-depth qualitative analysis of the conversations.

Furthermore, we were interested in *what happened* in these conversations triggered by the safe sex message, with regard to conversational valence, types of communication behavior, and behavioral determinants. We found that participants often talked casually about the topic "safe sex" by exchanging anecdotes (both personal anecdotes and anecdotes about other people) or by talking about their attitude towards safe sex or sexuality in general. This casual talk may be a main influential element of the conversation. The examples we found of talking *about* negotiating with a sexual partner, can also be categorized under casual talk, since they often refer to personal experiences or anecdotes. First-hand experiences conveyed by peers may be more persuasive than abstract numbers or statistics (Weinstein, 1993). Furthermore, conversations between peers appear to be a rich source of information for both conversation partners. For a number of conversations that indicated an increase in safe sex intentions, we identified elements of educating behavior. This result coincides with the idea of peer education as a potentially effective tool for improving sexual health among young people (e.g., Tolli, 2012). Moreover, not only are conversation partners provided with information on, for instance, the injunctive and descriptive norms of their conversation partners; expressing their own behavior with regard to safe sex may make them more aware of their own behavior patterns and the underlying attitudes and beliefs. Apparently, it is not necessary to admonish someone on their health behavior in order to influence their behavioral intentions. Rather, the conversations appear to be an opportunity to

(critically) reflect on one's safe sex behavior, attitudes and beliefs in the "safe" presence of someone one is comfortable with.

We furthermore found that a majority of conversations displayed a positive conversational valence. In other words, in most cases, conversation partners talked positively about safe sex. This was reflected in the number of conversations in which safe sex intentions of person A either stayed the same or increased after the conversation. When comparing our quantitative results with our qualitative results for each individual conversation, we found that most conversations that indicate an increase in safe sex intentions predominantly displayed behavioral determinants with a positive valence. This suggests that in order to understand the effects of health-related conversations on behavioral intentions, it is important to look at *what* is said in these conversations and *how* this is said, and not only focus on the quantitative questionnaire scores.

Hendriks et al. (2012) found that a negative conversational valence, in the context of binge drinking, was associated with healthier behavioral intentions, i.e., higher intentions to refrain from binge drinking. In our study, however, when we compared quantitative and qualitative analyses, we found some discrepancies between conversational valence and scores on behavioral intentions. According to the reasoned action approach (Fishbein & Ajzen, 2010), changes in behavioral intention stem from a change in beliefs regarding attitudes, social norms, or perceived behavioral control. In the conversations, a discrepancy between, e.g., one's own attitude and own behavior, or social norms and one's own behavior, may have become visible; it appeared to be difficult for participants to 'stick with', for instance, past unsafe sex behavior when a social norm in favor of safe sex was discussed in the conversation. This inconsistency in beliefs and behavior may lead to a state of cognitive dissonance (see e.g., Harmon-Jones & Mills, 1999), which can be solved in two ways: (1) by changing behavioral intentions to be consistent with beliefs, e.g., by 'promising' safer sex behavior in the future, or (2) by changing beliefs to be consistent with behavioral intentions, for instance, by emphasizing the hassle of using a condom. This mechanism of cognitive dissonance in conversations may be explored further in future research.

Previous studies on the persuasive effects of conversations have either relied solely on questionnaire-based measures of conversational behavior, or focused on the rather general measure of conversational valence. The present study is one of the first empirical studies that relates the effects with the content of *actual* safe sex conversations, triggered by a safe sex message. In order to maximize external validity we provided participants with the freedom to choose their own conversation partner. Furthermore, participants recorded the conversations in their private environment, which may have increased their feelings of comfort compared to a laboratory study setting. Nevertheless, there are some methodological issues that need to be addressed in future research.

First of all, it should be taken into account that safe sex is generally seen as a sensitive topic (e.g., Moyer-Gusé, Chung, & Jain, 2011). In order to maintain a good relationship, avoiding such sensitive topics may be an unspoken relational norm (Allen, Emmers-Sommer, & Crowell, 2002). Not everyone may talk about sensitive topics equally openly; sometimes, people may be more reluctant to talk about e.g., safe sex. Perhaps, for this topic and for other sensitive topics, people may not be truthful about their own beliefs when these beliefs conflict with the perceived social norm. In such cases where there may be a discrepancy between social norms and one's own beliefs, a (positive) conversational valence score should be treated with caution.

Furthermore, it should be taken into account between whom the conversations take place. In our study, most of the dyads consisted of two female conversation partners. It may be interesting for future studies to include male-male and mixed-sex dyads. Moreover, in the present study, we mainly focused on sexually active college students without a steady sexual partner. In addition, in our study, the target participants were completely free to choose whom to talk to; we did not place constraints on whether "person B" did have a steady sexual partners, or whether this person was sexually active or not. These factors may affect the conversations regarding the extent to which anecdotes and experiences with respect to safe sex are shared. Future research could specifically select dyads differing in sex, sexual activity and relationship status, but should in any event take those factors into account.

5. Conclusion

In this study, we looked into the quantitative effects and into the content of actual conversations about safe sex, triggered by a safe sex message, on college students' safe sex related intentions. We found that watching a safe sex message followed by a conversation on this issue increased intentions related to safe sex. Participants appeared to seize conversations as an opportunity to exchange information, and to share experiences and attitudes with regard to safe sex, thus exposing behavioral patterns and social norms. Our results show that it is not sufficient to look only at quantitative effects of conversations, but that content-related aspects, such as conversational valence, type of communication behavior and behavioral determinants brought up in conversations should also be considered in order to understand the how and why of conversational effectiveness. Future research may extend our findings to

other contexts and other types of dyads, and may also focus on the cognitive dissonance and sensitivity that may be associated with talking about safe sex.

Competing Interests Statement

The authors declare that they have no competing or potential conflicts of interest.

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Notes

Note 1. Since the coders did not independently analyze the dataset we only report percentages of agreement in this section and the following sections, instead of a Cohen's kappa.

Appendix A: Measures

Safe sex behavior (W1-Q and W3-Q)

Safe sex behavior was measured using a five-point semantic differential item: "When I have sex, I have safe sex" (1 = never, 5 = always; 9 = n.a.). In W3-Q, safe sex behavior was assessed again using three five-point semantic differential items: "In the past two weeks, when I had sex, I had safe sex" (1 = never, 5 = always; 9 = n.a.).

Safe sex and SSC intentions (W1-Q and W2-Q)

The intention to engage in safe sex was measured using two seven-point Likert items (Cronbach's $\alpha = .97$; $r = .94$): "I plan on only having safe sex", and "I will only have safe sex" (1 = I completely disagree, 7 = I completely agree). The intention to engage in SSC with a sexual partner and with friends was measured using four seven-point Likert items (Cronbach's $\alpha = .97$; $r = .95$ for sexual partner and Cronbach's $\alpha = .94$; $r = .88$ for friends): "I plan on talking with a sexual partner [friends] about using condoms [safe sex]" and "I will talk with a sexual partner [friends] about using condoms [safe sex]" (1 = I completely disagree, 7 = I completely agree).

Other (W1-Q and W2-Q)

Finally, questions were asked regarding participants' age, gender, sexual preference (open ended question), sexual activity ("Have you been sexually active in the past year? Yes/No"), and status of having a steady sexual partner ("Do you have a steady sexual partner? Yes/No"). Furthermore, in an open-ended question in the posttest, we asked what the relationship was with the person with whom participants participated in W2 and W3 (e.g., friends or family).

Appendix B: Definitions of behavioral determinants (based on Fishbein & Ajzen, 2010)

Intention: A person's estimate of the likelihood or perceived probability of performing a given behavior.

Attitude: A latent disposition or tendency to respond with some degree of favorableness or unfavorableness to a psychological object. Attitudes may consist of two aspects:

Instrumental aspect: Anticipated positive or negative consequences.

Experiential aspect: Positive or negative experiences perceived to be associated with performing the behavior.

Perceived norm: Perceived social pressure to perform or not to perform a given behavior. Two types of norms can be distinguished:

Injunctive norm: Perceptions concerning what should or ought to be done.

Descriptive norm: Perceptions that others are or are not performing the behavior in question.

Perceived behavioral control: People's perceptions of the degree to which they are capable of (perceived capacity), or have control over (perceived autonomy), performing a given behavior.

Appendix C: Analyses per conversation

Table 3. Information per conversation on (1) sex of conversation partners; (2) relationship between conversation partners; (3) types of communication behavior identified (dominant type of behavior in bold); (4) conversational valence; and (5) person A's scores on safe sex intention at W1 and W2. 1 = low; 7 = high

Conv.	Sex		Relation	Type of communication behavior				Valence	Safe sex intention (person A)		
	A	B		Casual	Adm.	Edu	Negot		W1	W2	Δ
1	F	F	Friends	X				+	6.0	6.5	+0.5
2	F	F	Friends	X				+	7.0	Missing	-
3	F	F	Friends	X	X			+	2.0	2.0	0.0
4	F	F	Friends	X				+	5.0	7.0	+2.0
5	F	F	Friends/roommates	X	X	X		-	4.0	5.0	+1.0
6	F	F	Roommates	X				-	4.0	5.0	+1.0
7	F	M	Partners (not sexually active)					+	7.0	7.0	0.0
8	F	F	Friends					+	3.0	4.0	+1.0
9	F	F	Friends	X	X	X		-	4.0	5.0	+1.0
10	F	F	Family	X				-	7.0	7.0	0.0
11	F	F	Family	X	X			+	5.0	4.0	-1.0
12	M	M	Friends	X		X		+	5.5	2.0	-3.5
13	F	F	Friends	X		X		+	5.0	6.0	+1.0
14	F	F	Friends	X		X		+	5.0	6.5	+1.5
15	F	F	Friends	X		X		+	7.0	6.5	-0.5
16	F	F	Friends					+	6.0	7.0	+1.0
17	F	F	Friends	X		X		+	4.0	6.0	+2.0
18	M	M	Friends	X				+	6.5	6.0	-0.5
19	F	M	Partners (not sexually active)	X		X		+	7.0	6.0	-1.0
20	F	F	Friends	X	X	X		-	5.0	5.5	+0.5
21	M	M	Friends	X		X		+	5.0	4.5	-0.5
22	F	F	Friends	X				+	5.5	3.5	-2.0
23	M	F	Friends	X		X		+	6.0	7.0	+1.0
24	F	F	Friends	X	X	X		+	2.5	5.0	+2.5

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